Data Evaluation Report on the Acute Toxicity of GF-2633 (2,4-D DMA and aminopyralid) to Sheepshead Minnows (*Cyprinodon variegatus*)

PMRA Submission Number {.....} EPA MRID Number 48939505

Data Requirement:	PMRA Data Code	{.....}
	EPA DP Barcode	289122
	OECD Data Point	{.....}
	EPA MRID	48939505
	EPA Guideline	850.1075

Test material: GF-2633
Common name: GF-2633
Chemical name: IUPAC: Not reported
CAS name: Not reported
CAS No.: Not reported
Synonyms: Not reported

Purity: 43.0% 2,4-D DMA + 8.43% aminopyralid

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Staff Scientist, CSS-Dynamac Corporation

Signature: Rebecca L. Bryan
Date: 12/22/2015

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Environmental Scientist, CDM Smith, Inc.

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Date: 05/23/2016

Primary Reviewer: Rebecca Lazarus, Ph.D.
{EPA/OPP/EFED/ERB1}

Date: 6-2-2016

Secondary Reviewer(s): {.....}
{EPA/OPP/EFED/ERB1}

Date: {.....} 6/3/16

Reference/Submission No.: {.....}

Company Code	{.....}	[For PMRA]
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EPA PC Code	030019 and 005100/005029	

Date Evaluation Completed: 6-3-2016

CITATION: Dinehart, S. 2011. GF-2633: Acute Toxicity to the Sheepshead minnow, *Cyprinodon variegatus,* Determined Under Static-Renewal Test Conditions. Unpublished study performed by ABC Laboratories, Inc., Columbia, MO. Laboratory Study No. 66954. Study sponsored by Dow AgroSciences LLC Indianapolis, IN. Study initiated May 4, 2011 and completed October 31, 2011.

DISCLAIMER: This document provides guidance for EPA and PMRA reviewers on how to complete a data evaluation record after reviewing a scientific study concerning the acute toxicity of a pesticide to fish. It is not intended to prescribe conditions to any external party for conducting this study nor to establish absolute criteria regarding the assessment of whether the study is scientifically sound and whether the study satisfies any applicable data requirements. Reviewers are expected to review and to determine for each study, on a case-by-case basis, whether it is scientifically sound and provides sufficient information to satisfy applicable data requirements. Studies that fail to meet any of the conditions may be accepted, if appropriate; similarly, studies that meet all of the conditions may be rejected, if appropriate. In sum, the reviewer is to take into account the totality of factors related to the test methodology and results in determining the acceptability of the study.

EXECUTIVE SUMMARY:

In a 96-hr acute toxicity study, sheepshead minnows (*Cyprinodon variegatus*) were exposed to the end-use product GF 2633 (2,4-D DMA+ aminopyralid) at nominal concentrations of 0 (negative control), 9.5, 19, 38, 75, and 150 mg GF-2633/L under static-renewal conditions. Mean measured concentrations were <1.90 (<MQL, negative control), 9.36, 18.6, 38.4, 75.1, and 152 mg GF-2633/L. After 96 hours, mortality was 55% in the mean-measured 152 mg GF-2633/L treatment group. No mortality was observed in the control or ≤75.1 mg GF-2633/L groups. The sublethal effect of breaking the surface was observed in one 152 mg GF-2633/L fish at 72 hours. The LC_{50} (95% C.I.) value was determined to be 143 (110 to 185) mg GF-2633/L, based on mean-measured formulation concentrations. This corresponded to LC_{50} values of 61.3 (47.3-79.5) mg ai/L based on mean-measured 2,4-D DMA concentrations and 12.0 (9.27-15.6) mg ai/L based on mean-measured aminopyralid concentrations.

Based on the results of this study, GF-2633 would be classified as **practically non-toxic** to *Cyprinodon variegatus* in accordance with the classification system of the U.S. EPA, whereas the individual active ingredients would both be classified as **slightly toxic**.

This study is **scientifically sound** and is classified as **acceptable**.

Results Synopsis

Test Organism Size/Age (mean weight or length): 16 ± 1.9 mm, 0.0695 ± 0.0255 g, juveniles
Test Type (Flow-through, Static, Static Renewal): Static-renewal

GF-2633
LC_{50}: 143 mg GF-2633/L 95% C.I.: 110-185 mg GF-2633/L
Probit Slope: N/A 95% C.I.: N/A

2,4-D DMA
LC_{50}: 61.3 mg ai/L 95% C.I.: 47.3-79.5 mg ai/L
Probit Slope: N/A 95% C.I.: N/A

Aminopyralid
LC_{50}: 12.0 mg ai/L 95% C.I.: 9.27-15.6 mg ai/L
Probit Slope: N/A 95% C.I.: N/A

Endpoint(s) affected: Mortality. The only effects on mortality were at 96 hrs, thus a probit slope could not be calculated.

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: Ecological Effects Test Guidelines, OPPTS Number 850.1075, Fish Acute Toxicity Test.

The following deviations from the OPPTS 850.1075 guidelines were noted:

1. The total organic carbon, particulate matter concentration, and chlorine content of the dilution water were not reported.
2. Dissolved oxygen concentrations were >60% saturation with the exception of 2 replicates at test termination in the 38 and 75 mg GF-2633/L groups.

These deviations do/do not affect the validity of the study.

COMPLIANCE: Signed and dated GLP, Quality Assurance and No Data Confidentiality statements were provided. The study was conducted in accordance with U.S. EPA (40 CFR 160) GLP standards with one exception: the latest water characterizations were not performed according to GLP.

A. MATERIALS:

1. Test material: GF-2633

Description: Yellow liquid

Lot No./Batch No. : F1506-91B

Purity: 43.0% 2,4-D DMA + 8.43% aminopyralid

Stability of compound under test conditions: Stable. The mean measured concentrations were 98-101% of nominal. The new 0- and 48- hour measured concentrations were 95-103% of nominal, and the old 48- and 96-hour measured concentrations were 97-105% of nominal.

Storage conditions of test chemicals: Room temperature

Physicochemical properties of GF-2633.

Parameter	Values	Comments
Water solubility at 20°C	Not reported	
Vapor pressure	Not reported	
UV absorption	Not reported	
pKa	Not reported	
Kow	Not reported	

(OECD recommends water solubility, stability in water and light, pKa, Pow, and vapor pressure of test compound)

2. Test organism:

Species:	Sheepshead minnow (*Cyprinodon variegatus*)
Age at test initiation:	Age not specified
Weight at study initiation:	Mean: 0.0695 g (0.0371 to 0.0995 g)
Length at study initiation:	Mean: 16 mm (14 to 18 mm)
Source:	In-house cultures

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding study: A 96-hour static-renewal range-finding test was performed from May 9 to 13, 2011 at nominal concentrations of 0 (control), 0.10, 1.0, 10, and 100 mg GF-2633/L. After 96 hours, no mortality or sublethal effects were observed in the control or treatment groups. A limit test was performed May 31 to June 2, 2011 at nominal concentrations of 0 (control) and 100 mg GF-2633/L, but due to unexpected mortalities a multi-concentration definitive test was conducted.

b. Definitive study:

Table 1: Experimental Parameters

Parameter	Details	Remarks *Criteria*
Acclimation Period: Conditions (same as test or not): Feeding: Health: (any mortality observed)	 14 days Same as test Fed commercial fish food and brine shrimp daily No diseases were observed or treated prior to testing (mortality not reported).	*The recommended acclimation period is a minimum of 14 days; OECD guideline recommends a minimum of 12 days. Pretest mortality should be < 3% 48 h. prior to testing. OECD pretest mortality criteria: >10% = rejection of entire batch; ≥ 5 and ≤ 10% = continued acclimation for 7 days; <5% = acceptable.*
Duration of the test:	96 hours	*The recommended test duration is 96 hours.*
Test condition Static/flow-through: Type of dilution system for flow-through method: Renewal rate for static renewal:	 Static renewal N/A At 48 hours	*A reproducible supply of toxicant is recommended. Consistent flow rate is usually 5-10 vol/24 hours; meter systems should be calibrated before and after study and checked twice daily during test period.*

Parameter	Details	Remarks *Criteria*
Aeration, if any:	No aeration provided during testing.	*Aeration is not recommended; OECD guideline recommends aeration. If aeration is necessary, test solutions must be analyzed periodically to verify exposure.*
Test vessel Material (glass/stainless steel): Size: Fill volume:	 Glass jars 3.8 L *Ca.* 3 L (18 cm depth)	*Test vessel size is usually 19 L (5 gal) or 30 x 60 x 30 cm.* *Fill volume is usually 15-30 L of solution.*
Source of dilution water:	Laboratory seawater at salinity of 20 ± 3‰ was prepared by adding a sea salt mix (Crystal Sea Marine Mix, Marine Enterprises International, Inc.) to reverse osmosis laboratory freshwater. Synthetic seawater was filtered (5µm) prior to use.	*Recommended source of dilution water is soft, reconstituted water or water from a natural source. EPA does not recommend the use of dechlorinated tap water; however, its use may be supportable if the biological responses for the organisms and chemical analyses of residual chlorine meet conditions in the Agency's 850.1010 guidelines for dilution water (http://www.epa.gov/opptsfrs/OPPTS_Harmonized/850_Ecological_Effects_Test_Guidelines/Draft/850.1010.pdf) Dilution water should be intensely aerated before the study. OECD permits dechlorinated tap water.*

Parameter	Details	Remarks *Criteria*
Water parameters Hardness: pH: Dissolved oxygen: Total Organic Carbon: Particulate matter: Metals: Pesticides: Chlorine: Temperature: Salinity {for marine or estuarine species}: Intervals of water quality measurement:	 N/A 7.4 to 8.2 old solutions: 4.4 to 6.4 mg/L (58 to 84% saturation) new solutions: 7.0 to 7.4 mg/L (92 to 99% saturation) Not reported Not reported See remarks See remarks Not reported 21.9 to 22.6°C 19.7 to 20.2‰ Temperature, dissolved oxygen, pH, and salinity measurements were made every 24 hours. Additionally, temperature was continuously monitored in a centrally located test chamber.	Results from the analysis of the ABC Laboratories salt water from a sample taken on February 2011 were provided. No metals or pesticides were detected at levels considered toxic. Dissolved oxygen concentrations were >60% saturation with the exception of 2 replicates at test termination in the 38 and 75 mg ai/L groups, therefore aeration was not necessary. *Hardness:* *EPA recommends 40 - 48 mg/L as $CaCO_3$ (OECD recommends 10 - 250 mg/L)* *pH:* *EPA recommends 7.2 - 7.6; 8.0-8.3 for marine-stenohaline fishes, 7.7-8.0 for estuarine-euryhaline fishes, monthly range < 0.8); (OECD recommends pH 6.0 - 8.5)* *Dissolved Oxygen:* *EPA recommends: Static: ≥ 60% during first 48 hrs and ≥ 40% during second 48 hrs; flow-through: ≥ 60%; (OECD guideline recommends at least 80% saturation value).* *Temperature:* *EPA recommends 12 °C for coldwater species, 17 or 22 °C for warmwater species, and 22 ± 1 °C for estuarine/marine organisms. (OECD recommends 21 – 25°C for bluegill and 13 – 17°C for rainbow trout*). *Salinity:* *EPA recommends 30-34‰ (parts per thousand) for marine, 10-17‰ for estuarine fish, weekly range < 6‰.* *Water quality should be measured at beginning of test and every 48 hours.*
Number of replicates/group Negative control: Solvent control: Treated:	 2 N/A 2	*Recommended numbers of replicates include a control and five treatment levels. Each concentration should be 60% of the next highest concentration; concentrations should be in a geometric series.*

Parameter	Details	Remarks *Criteria*
Number of organisms/replicate/group Negative control: Solvent control: Treated:	 10 N/A 10	*Number of organisms per replicate should be ≥ 10/concentration; OECD guideline recommends at least 7 fish/concentration.*
Biomass loading rate:	0.232 g/L	*Recommended static conditions are ≤ 0.8 g/L at ≤ 17°C and ≤ 0.5 g/L at > 17°C. Recommended flow-through conditions are ≤ 1 g/L/day. OECD recommends a maximum of 1 g fish/L for static and semi-static, while higher rates are recommended for flow-through.*
Test concentrations Nominal: Mean measured:	GF-2633 0 (negative control), 9.5, 19, 38, 75, and 150 mg ai/L Aminopyralid triisopropanolammonium 0.80, 1.60, 3.20, 6.32, and 12.7 mg ai/L 2,4-D dimethylammonium 4.09, 8.17, 16.3, 32.3, and 64.5 mg ai/L GF-2633 <1.90(<MQL, negative control), 9.36, 18.6, 38.4, 75.1, and 152 mg ai/L Aminopyralid triisopropanolammonium 0.79, 1.57, 3.24, 6.33, and 12.8 mg ai/L 2,4-D dimethylammonium 4.02, 8.00, 16.5, 32.3, and 65.4 mg ai/L	Measured concentrations based on aminopyralid analysis and reported as mg GF-2633/L.
Solvent (type, percentage, if used):	N/A	*The solvent should not exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests; OECD recommends that the solvent not exceed 100 mg/L.*

Parameter	Details	Remarks *Criteria*
Lighting:	16 hour light/8 hour dark photoperiods with 30 minute simulated dawn and dusk periods, light intensity was 727 lux	*The recommended photo period is 16 hours of light and 8 hours of dark with a 15-30 minute transition period. OECD recommends a photo period of 12 -16 hours.*
Feeding:	Food was withheld for approximately 50 hours prior to test initiation and fish were not fed during the test.	*Fish should not feed during the study.*
Recovery of chemical: Frequency of determination: Minimum quantifiable limit (MQL): Limit of detection (LOD):	98 to 101% of nominal 0 (new), 48 (old and new), and 96 (old) hours 1.90 mg ai/L Not reported	HPLC-UV (280 nm).
Positive control {if used, indicate the chemical and concentrations}	N/A	
Other parameters, if any	None	

2. Observations:

Table 2: Observations

Parameter	Details	Remarks *Criteria*
Parameters measured including the sublethal effects/toxicity symptoms	Mortality Sublethal effects/toxicity symptoms	
Observation intervals:	Every 24 hours	*Observation intervals should be a minimum of every 24 hours.*
Were raw data included?	Yes	
Other observations, if any	None	

II. RESULTS AND DISCUSSION:

A. MORTALITY:

After 96 hours, mortality was 55% in the mean-measured 152 mg GF-2633/L treatment group. No mortality was observed in the control or ≤75.1 mg GF-2633/L groups. Mortality was significantly different from the control in the 152 mg GF-2633/L group. The LC_{50} (with 95% C.I) and NOAEC values were determined to be 143 (110 to 185) mg GF-2633/L and 75.1 mg GF-2633/L, respectively, based on mean-measured concentrations.

Table 3: Effect of GF-2633 on Mortality of *Cyprinodon variegatus*. [a]

Mean-measured (and nominal) concentration (mg GF-2633/L)	No. of fish at start of study	Observation period							
		24 Hrs		48 Hrs		72 Hrs		96 Hrs	
		No. Dead	% mortality	No. Dead	% mortality	No. Dead	% mortality	No. Dead	% mortality
<MQL (Control) [b]	20	0	0	0	0	0	0	0	0
9.36 (9.5)	20	0	0	0	0	0	0	0	0
18.6 (19)	20	0	0	0	0	0	0	0	0
38.4 (38)	20	0	0	0	0	0	0	0	0
75.1 (75)	20	0	0	0	0	0	0	0	0
152 (150)	20	6	30	7	35	9	45	11	55*
NOAEC	75.1 mg ai/L								
LC_{50} (95% C.I.)	143 (110 to 185) mg ai/L								

a Data were obtained from Table 2 on page 21 of the study report.
b MQL = 1.90 mg GF-2633/L
* Statistically significant difference as compared to the control (Fisher's Exact Test, $p<0.05$).

B. NON-LETHAL TOXICITY ENDPOINTS:

The sublethal effect of breaking the surface was observed in one 152 mg GF-2633/L fish at 72 hours. No other sublethal effects were observed during the study.

C. REPORTED STATISTICS:

All statistical analyses were performed using SAS® software (version 9.1). Estimates of LC_{50} values and their 95% confidence limits were calculated using the probit method and Trimmed Spearman-Karber method. The NOAEC was determined using a one-tailed Fisher's Exact test.

D. VERIFICATION OF STATISTICAL RESULTS:

Statistical Method: The reviewer analyzed mortality data using Trimmed Spearman-Kärber analysis via CETIS statistical software version 1.8.7.12 with database backend settings implemented by EFED on 10/20/15. Analyses were conducted using the mean-measured concentrations expressed as the formulated product and both individual active ingredients.

GF-2633*
96-hr LC_{50}: 143 mg GF 2633/L (64.8-211)
NOAEC: 75.1 mg GF-2633/L
LOAEC: 152 mg GF-2633/L (based on mortality)

2,4-D DMA
96-hr LC_{50}: 61.3 mg 2,4-D DMA/L (47.3-79.5)
NOAEC: 32.3 mg 2,4-D DMA/L
LOAEC: 64.5 mg 2,4-D DMA/L (based on mortality)

Aminopyralid TIPA
96-hr LC_{50}: 12.0 mg aminopyralid TIPA/L (9.27-15.6)
NOAEC: 6.33 mg aminopyralid TIPA/L
LOAEC: 12.8 mg aminopyralid TIPA/L (based on mortality)
Sublethal effects: One fish broke surface

*****GF-2633 is an adjusted mixture of the proportions of two active ingredients 2,4-D DMA and aminopyralid at the onset of the study.

E. STUDY DEFICIENCIES:

No major deficiencies from the guidelines were observed. The slight deficiency that the reviewer noted a slight (2%) deviation from the Guidelines in the middle two treatment groups. No mortalities were observed in those treatment groups indicating that this was not a major issue.

F. REVIEWER'S COMMENTS:

The reviewer's results were based on the mean-measured formulation, 2,4-D DMA, and aminopyralid concentrations, and are therefore reported in the Executive Summary and Conclusions sections of this DER.

GF-2633 is an adjusted mixture based on proportions of 2,4-D DMA and aminopyralid at the onset of the study. The formulated product, GF-2633, consisted of 8.43% wt/wt aminopyralid triisopropanolammonium (i.e, 4.38% wt/wt aminopyralid acid equivalent) and 43.0% wt/wt 2,4-D dimethylammonium (35.7% wt/wt 2,4-D acid equivalent). When calculating the nominal and mean-measured concentrations, the reviewer used the active ingredients (not the acid equivalents).

One fish exhibited a sublethal effect (breaking the surface) at the highest dose (152 mg GF-26333/L) at 72 hours. There were no other sublethal effects observed, nor were they reported following a traditional dose response pattern. For this reason, the sublethal effect indicated in this study was not considered of great importance.

The in-life phase of the definitive test was conducted from June 6 to 10, 2011.

G. CONCLUSIONS:

This study **is scientifically sound** and is classified as **acceptable**. After 96 hours, mortality was 55% in the mean-measured 152 mg GF-2633/L treatment group. No mortality was observed in the control or ≤75.1 mg GF-2633/L groups. The sublethal effect of breaking the surface was observed in one 152 mg GF-2633/L fish at 72 hours. The LC_{50} (95% C.I.) value was determined to be 143 (110 to 185) mg GF-2633/L, based on mean-measured formulation concentrations. This corresponded to LC_{50} values of 61.3 (47.3-79.5) mg ai/L based on mean-measured 2,4-D DMA concentrations and 12.0 (9.27-15.6) mg ai/L based on mean-measured aminopyralid concentrations.

III. REFERENCES:

Rebstock, M. (2011) GF-2633: "Acute Toxicity to the Water Flea, Daphnia magna, Determined Under Static Test Conditions", DAS 110056, ABC Study No. 66953.

All other references were standard guidelines or methodologies.

CETIS Summary Report

OPPTS 850.1075 Acute Fish **ABC Labs**

Batch ID:	15-3512-8155	**Test Type:**	Mortality (96-h)	**Analyst:**	
Start Date:	06 Jun-11	**Protocol:**	OPPTS 850.1075 Acute Fish	**Diluent:**	Well Water
Ending Date:	07 Jan-16 08:55	**Species:**	Cyprinodon variegatus	**Brine:**	Crystal Sea
Duration:	1676d 9h	**Source:**	Lab In-House Culture	**Age:**	16mm
Sample ID:	16-7966-7263	**Code:**	48939505 24D	**Client:**	CDM Smith - J. Marton
Sample Date:	06 Jun-11	**Material:**	2,4-D, dimethylamine salt	**Project:**	Herbicide
Receive Date:	07 Jan-16 08:55	**Source:**	Dow AgroSciences		
Sample Age:	NA	**Station:**			

Batch Note: PC Code 030019+005100, MRID 48939505, mean-measured 2,4-D DMA concentrations
Sample Note: PC Code 030019+005100, MRID 48939505, mean-measured 2,4-D DMA concentrations

Point Estimate Summary

Analysis ID	Endpoint	Level	mg ai/L	95% LCL	95% UCL	TU	Method
08-2035-7697	96h Mortality Rate	LC50	61.3	47.3	79.5		Trimmed Spearman-Kärber

96h Mortality Rate Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	2	0	0	0	0	0	0	0		
4.02		2	0	0	0	0	0	0	0		
8		2	0	0	0	0	0	0	0		
16.5		2	0	0	0	0	0	0	0		
32.3		2	0	0	0	0	0	0	0		
65.4		2	0.55	0	1	0.5	0.6	0.05	0.0707	12.9%	

96h Mortality Rate Detail

C-mg ai/L	Control Type	Rep 1	Rep 2
0	Negative Control	0	0
4.02		0	0
8		0	0
16.5		0	0
32.3		0	0
65.4		0.6	0.5

OPPTS 850.1075 Acute Fish **ABC Labs**

Batch ID:	00-8193-7306	**Test Type:**	Mortality (96-h)	**Analyst:**	
Start Date:	06 Jun-11	**Protocol:**	OPPTS 850.1075 Acute Fish	**Diluent:**	Well Water
Ending Date:	07 Jan-16 08:58	**Species:**	Cyprinodon variegatus	**Brine:**	Crystal Sea
Duration:	1676d 9h	**Source:**	Lab In-House Culture	**Age:**	16mm
Sample ID:	07-1658-8662	**Code:**	48939505 amino	**Client:**	CDM Smith - J. Marton
Sample Date:	06 Jun-11	**Material:**	Aminopyralid	**Project:**	Herbicide
Receive Date:	07 Jan-16 08:58	**Source:**	Dow AgroSciences		
Sample Age:	NA	**Station:**			

Batch Note: PC Code 030019+005100, MRID 48939505, mean-measured aminopyralid concentrations
Sample Note: PC Code 030019+005100, MRID 48939505, mean-measured aminopyralid concentrations

Point Estimate Summary

Analysis ID	Endpoint	Level	mg ai/L	95% LCL	95% UCL	TU	Method
17-4888-7291	96h Mortality Rate	LC50	12	9.27	15.6		Trimmed Spearman-Kärber

96h Mortality Rate Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	2	0	0	0	0	0	0	0		
0.79		2	0	0	0	0	0	0	0		
1.57		2	0	0	0	0	0	0	0		
3.24		2	0	0	0	0	0	0	0		
6.33		2	0	0	0	0	0	0	0		
12.8		2	0.55	0	1	0.5	0.6	0.05	0.0707	12.9%	

96h Mortality Rate Detail

C-mg ai/L	Control Type	Rep 1	Rep 2
0	Negative Control	0	0
0.79		0	0
1.57		0	0
3.24		0	0
6.33		0	0
12.8		0.6	0.5

OPPTS 850.1075 Acute Fish **ABC Labs**

Batch ID:	18-1583-9776	**Test Type:**	Mortality (96-h)	**Analyst:**	
Start Date:	06 Jun-11	**Protocol:**	OPPTS 850.1075 Acute Fish	**Diluent:**	Well Water
Ending Date:		**Species:**	Cyprinodon variegatus	**Brine:**	Crystal Sea
Duration:	NA	**Source:**	Lab In-House Culture	**Age:**	16mm
Sample ID:	04-6883-9172	**Code:**	48939505 form	**Client:**	CDM Smith - J. Marton
Sample Date:	06 Jun-11	**Material:**	2,4-D DMA + Aminopyralid	**Project:**	Herbicide
Receive Date:		**Source:**	Dow AgroSciences		
Sample Age:	NA	**Station:**			

Batch Note: PC Code 030019+005100, MRID 48939505, mean-measured formulation concentrations
Sample Note: PC Code 030019+005100, MRID 48939505, mean-measured formulation concentrations

Point Estimate Summary

Analysis ID	Endpoint	Level	mg ai/L	95% LCL	95% UCL	TU	Method
12-0506-6070	96h Mortality Rate	LC50	143	110	185		Trimmed Spearman-Kärber

96h Mortality Rate Summary

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	2	0	0	0	0	0	0	0		
9.36		2	0	0	0	0	0	0	0		
18.6		2	0	0	0	0	0	0	0		
38.4		2	0	0	0	0	0	0	0		
75.1		2	0	0	0	0	0	0	0		
152		2	0.55	0	1	0.5	0.6	0.05	0.0707	12.9%	

96h Mortality Rate Detail

C-mg ai/L	Control Type	Rep 1	Rep 2
0	Negative Control	0	0
9.36		0	0
18.6		0	0
38.4		0	0
75.1		0	0
152		0.6	0.5